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ADDENDUM: COMMISSURAL SECTION AND PROPAGATION OF SEIZURES.

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The number and distribution of forebrain commissural fibers suggests a significant role in the spread of seizure activity. Furthermore, disease of the corpus callosum has occasionally ameliorated a preexisting seizure disorder. These considerations led Van Wagenen and Herren [11] to divide the corpus callosum to treat epilepsy. Most of their bisections were incomplete and only one, done seriatim, included the entire corpus callosum and anterior commissure; nevertheless, twelve patients had postoperative convulsions restricted to one side [1]. Since then, experiments by Frost et al. [5] and Poblete et al. [8] showed the importance of the anterior commissure for interhemispheric spread from temporal lobe foci. Meanwhile, split-brain studies showed an absence of disabling symptoms in ordinary behavior [9]; the occasional postsurgical seizures in monkeys were largely unilateral.

Importance of forebrain commissures for generation, maintenance, and transmission of epileptic seizures is further indicated in our recent experience with a group of patients having intractable epilepsy [2, 3]. Complete transection of corpus callosum and anterior commissure was done in a single operation. The hippocampal commissure, though not separately visualized, was presumed to have been divided along with the corpus callosum in all cases. The massa intermedia was also cut in three individuals. In a total of ten patients for whom seizure status can now be evaluated for a 2-year follow-up period or longer, only one has not shown improvement. Generalized convulsions that before surgery had been occurring with high and increasing frequency have been largely abolished for 7, 6, 5, 5, 4, 4, 3, 3, and 2 years in 9 cases. A few generalized convulsions have occurred when medication was reduced. Improvement is apparent in focal as well as generalized seizures, although most of the patients have continued to have at least an occasional brief focal episode. It thus appears that the combination of cerebral commissurotomy plus postoperative medication has limited propagation of seizure activity from a cortical focus.

Although we cannot review here all the experimental contributions, it can be said that they generally confirm participation of forebrain commissures in interhemispheric propagation of seizure activity, while at the same time demonstrating the importance of lower level pathways. It was suggested by Hoefer and Pool [6] and Straw and Mitchell [10] that interhemispheric spread following callosal section might be attributable to the anterior commissure. We also note that the latter authors as well as Marcus and Watson [7] used gallamine for immobilization whereas Erickson [4] used ether. Spread from a cortical focus via brain-stem circuits probably depends on the excitatory level of these circuits. All of our patients have been maintained on drugs following operation although in reduced amounts in most cases. The success of cerebral commissurotomy in largely eliminating generalized convulsions we tentatively interpret as being dependent upon concurrent suppression of subcerebral circuits by postoperative medication.

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